

WHAT IS CLAIMED IS:

1. An integrated IP network including:

a plurality of IP networks; and

a plurality of network node devices;

wherein the network node devices are each connected to one or more of the IP networks via communication circuits and have their network node-points connected to external terminals via communication circuits;

wherein, when the network node device receives an IP packet from the external terminal, the following sequence of operations is performed: in a first case where a network node-point address of the network node-point through which the received IP packet has passed is registered in an address management table as not specifying a virtual dedicated line connection, a source terminal address, a destination terminal address and a port number registered in the address management table are compared with a source terminal address, a destination terminal address, a source port number and a destination port number contained in the IP packet to find a record containing a network identifier indicating a destination IP network to which the IP packet is to be sent; in a second case where a network node-point address of the network node-point through which the received IP packet has passed is registered in the address management table as specifying a virtual dedicated line connection, a record

containing a network identifier indicating a destination IP network to which the IP packet is to be sent is detected; after the procedure of the first case or the second case is completed, the source network node-point address and the destination network node-point address contained in the detected record are used to generate an integrated IP network packet which is then sent to the destination IP network; the integrated IP network packet passes through an IP packet exchange point and the destination IP network and reaches another network node device where an integrated IP network header is removed from the integrated IP network packet to restore the sending IP packet which is then sent to a destination IP terminal;

wherein the address management table is referenced to select a destination IP network to which the IP packet is to be transferred and the IP packet is sent to the destination IP network, and the integrated IP network packet is passed through two or more IP networks of different communication companies within the destination IP network and through IP packet exchange points.

2. An integrated IP network according to Claim 1, wherein only the network node-point addresses are compared and the port numbers are not compared.

3. An integrated IP network according to Claim 1 or 2,

wherein there is one communication company and no IP packet exchange point that connects IP networks run by different communication companies is included.

4. An integrated IP network according to any one of Claims 1 to 3, wherein at least one of the network node devices is connected to an IP video network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP video device.

5. An integrated IP network according to any one of Claims 1 to 3, wherein at least one of the network node devices is connected to an IP telephone network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP telephone.

6. An integrated IP network including:

a plurality of IP networks; and

a plurality of network node devices;

wherein the network node devices are each connected to one or more of the IP networks via communication circuits and have their network node-points connected to external terminals via communication circuits;

wherein the IP networks each include a dedicated domain name server; the domain name servers each has a correspondence

relationship between IP addresses of the external terminals and host names of the terminals; upon receiving from an external source terminal an IP packet whose destination is one of the domain name servers, the network node device transfers the received IP packet to the destination domain name server; the destination domain name server retrieves an IP address of a destination terminal corresponding to the host name of the destination terminal contained in the received IP packet and returns the IP packet containing the destination terminal's IP address obtained to the external source terminal; the source terminal generates a new IP packet having the destination terminal's IP address obtained from the domain name server in the above procedure and sends the generated IP packet to the network node device; the network node device compares a source terminal address, a destination terminal address and a port number registered in the address management table with a source terminal address, a destination terminal address and a port number contained in the IP packet to find a record specifying a destination IP network to which the IP packet is to be sent, generates an integrated IP network packet by using the source network node-point address and the destination network node-point address contained in the detected record, and sends the generated integrated IP network packet to the destination IP network; and the integrated IP network packet passes through the IP network and the IP packet exchange point and reaches

another network node device where an integrated IP network header is removed from the integrated IP network packet to restore the sending IP packet which is then sent to the destination IP terminal;

wherein the address management table is referenced to select a destination IP network to which the IP packet is to be transferred and the IP packet is sent to the destination IP network, and the integrated IP network packet is passed through two or more IP networks of different communication companies within the destination IP network and through IP packet exchange points.

7. An integrated IP network according to claim 6, wherein only the network node-point addresses are compared and the port numbers are not compared.

8. An integrated IP network according to Claim 6 or 7, wherein there is one communication company and no IP packet exchange point that connects IP networks run by different communication companies is included.

9. An integrated IP network according to any one of Claims 6 to 8, wherein at least one of the network node devices is connected to an IP audio-visual network inside the IP network and, outside the IP network, is connected through the network

node-point of the network node device to an IP audio-visual device.

10. An integrated IP network according to any one of Claims 6 to 8, wherein at least one of the network node devices is connected to an IP telephone network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP audio-visual device.

11. An integrated IP network according to any one of Claims 6 to 8, wherein at least one of the network node devices is connected to a best effort network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP terminal, IP telephone, or audio-visual device.

12. An integrated IP network according to any one of Claims 6 to 8, wherein at least one of the network node devices is connected to an IP data multicast network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP terminal, IP telephone, or audio-visual device.

13. An integrated IP network according to any one of Claims

6 to 8, wherein at least one of the network node devices is connected to an IP-based TV broadcast network inside the IP network and, outside the IP network, is connected through the network node-point of the network node device to an IP terminal, IP telephone, or audio-visual device.

14. An integrated IP network according to any one of Claims 6 to 8, wherein an ATM network, an FR network or a WDM network having a function of transferring IP packets is included in the IP network.

15. An integrated IP network according to Claim 6, wherein a DNS selection server having a function of selecting a single-purpose domain name server in the IP network is included in the IP network.